

Completozia complens Lohde.—This very interesting parasite of fern prothallia has not, heretofore, I believe, been reported as occurring in the United States. It was found by me last winter in fern prothallia grown in the Botanical Conservatory of Cornell University. The fungus is very interesting both from its relationship with the *Entomophthoræ* and from its being a parasite in plants. It is of very simple structure.

The germinating conidia do not enter the cells of the prothallia directly, but put out a short germ tube which enlarges at its end, and into this enlarged end the protoplasm migrates, thus forming a germinating vesicle or proembryo. From this germinating vesicle the tube arises which penetrates the cell of the prothallium. The cell wall forms a sheath around the entering tube and the wall here becomes reddish brown. The tube, which is quite slender, grows directly to the center of the cell lumen where it enlarges into a flask-shaped body, rich in protoplasm, very granular, and with large vacuoles. From this a short and thick branch grows out and curves more or less closely to the parent cell or hyphal body. Successive branches of a similar kind arise and curving around form a closely compacted botryose cluster, which eventually more or less completely fills the cell lumen. From the marginal cells of this cluster slender tubes arise which penetrate into the adjacent cells. Conidia and sexless (?) resting spores are formed.

In the formation of the conidia certain of the marginal cells of the botryose cluster grow through the wall of the prothallium cell to the exterior, where a single-spored sporangium is formed, either quite close to the surface of the prothallium when the conodiophore is very short, or at a little distance from it when it is longer. The conidium is thrown off with considerable force as in the other *Entomophthoræ*, and the basal end protrudes slightly as a prominent point. If the conidia are not in a favorable position for entering the cells of a prothallium, or the surrounding conditions are unsuitable for it, it may produce a short conidiophore and a secondary conidium be thrown off. This may quite likely be repeated several times.

The resting spores are formed from the central cells of the botryose cluster, and may vary in a single cell of the prothallium, and thus in a single cluster, from one to ten or fifteen. These cells become larger than the others, gradually round off, the protoplasm contracts somewhat and at the same time the wall thickens inward. The appearance of many of the outer cells in such a cluster suggests the possibility of there being a sexual process, but in no case have I seen any communication between these cells, although I have carefully examined

many. This however may have been overlooked because of the difficulty of observation in such a large mass of cells.

The fungus was found in prothallia of *Aspidium falcatum*, *Pteris argyria*, and *P. cretica*.

It was first described by Lohde.¹ Subsequently Leitgeb² made it the subject of a thorough investigation, and grew it in a large number of species of fern prothallia.—GEO. F. ATKINSON, *Ithaca, N. Y.*

Lemna Valdiviana in Massachusetts.—Several interesting botanical excursions have been made this year in the lands recently set apart by the state of Massachusetts for public parks.

By notice sent out by the superintendent of planting for the parks, the local botanists have had the opportunity of enjoying a series of pleasant field days and comparing the work done in different portions of the reservations.

One such trip was taken on Sept. 3d through the Blue Hills region, eight miles south of Boston. This public park is thirteen miles in circumference and includes the highest land in eastern Massachusetts (Blue Hill, 636^{ft}), as it is also the highest land on the Atlantic coast from southern Maine to Florida. It has long been locally famous for its rocky ledges, basin-like swamps, and, on its southern side, the extensive meadows and ponds of two sorts, rocky, with clear waters, and marshy, with dark waters.

The most interesting find on that occasion was a *Lemna*, which, so far as comparison with specimens at the Gray Herbarium shows, is *Lemna Valdiviana* Philippi; and I send this note of its occurrence so far north of its usual habitat, and would be very glad to have some southern or western *L. Valdiviana* in exchange.—GEO. G. KENNEDY, *Readville, Mass.*

Puccinia malvacearum.—Some years ago, the late Geo. W. Clinton of Buffalo, N. Y., expressed himself as disappointed because a certain *Ranunculus* did not turn out to be *R. bulbosus*. "Why can't Buffalo have this plant?"

We have rather desired at this place the presence of living *Puccinia malvacearum*, because it was so useful for the class room. This year, for the first time, it has been introduced with some hollyhocks purchased at the east. It has already made serious attacks on half a dozen species of plants in our botanic garden and now that we have it, the thing doesn't seem so funny.—W. J. BEAL, *Agricultural College, Mich.*

¹ Tagblatt der Naturforscherversammlung zu Breslau, 1874.

² Sitzungsbericht der Math.-Naturwiss. Classe d. kaiserliche Akademie der Wissenschaft. Wien 84¹: 288. 1881.